

Applicant(s): LEON MARIA ALBERTUS VAN DE LOGT ET AL.
Serial No.: 10/520,198
Filed: JULY 20, 2005
For: ELECTRONIC CIRCUIT WITH TEST UNIT
Art Unit: 2829
Examiner: ISLA RODAS, R.

Attorney Docket No.: NL020601

IN THE CLAIMS:

Please consider the following claims:

1. (Currently amended) An electronic circuit, comprising:
a plurality of input/output (I/O) nodes for connecting the electronic circuit to at least a further electronic circuit;
a test unit for testing the electronic circuit in a test mode of the electronic circuit, the test unit comprising a combinatorial circuit having a plurality of inputs and an output, the combinatorial circuit implementing an exclusive logic function;
the I/O nodes being logically connected to the test unit in the test mode, wherein:
a first selection of the I/O nodes is arranged to carry respective input signals and is connected to the plurality of inputs of the combinatorial circuit; and
a second selection of the I/O nodes comprises a first I/O node and is arranged to carry respective output signals, the first I/O node being coupled to the output of the combinatorial circuit; and
the second selection of I/O nodes further comprises a second I/O node that is coupled to an I/O node from the first selection of I/O nodes in the test mode via a connection that includes at least one of a buffer and an inverter, wherein the inverter facilitates a third I/O node being coupled to a further I/O node from the first selection of I/O nodes.

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2. (Currently amended) The electronic circuit as claimed in claim 1, wherein the ~~second selection of I/O nodes further comprises a third I/O node being coupled to a further I/O node from the first selection of I/O nodes in the test mode~~ is accomplished via at least one further connection that bypasses the combinatorial circuit.

3. (Previously presented) An electronic circuit, comprising:

- a plurality of input/output (I/O) nodes for connecting the electronic circuit to at least a further electronic circuit;
- a test unit for testing the electronic circuit in a test mode of the electronic circuit, the test unit comprising a combinatorial circuit having a plurality of inputs and an output, the combinatorial circuit implementing an exclusive logic function;
- the I/O nodes being logically connected to the test unit in the test mode, wherein:
 - a first selection of the I/O nodes is arranged to carry respective input signals and is connected to the plurality of inputs of the combinatorial circuit;
 - a second selection of the I/O nodes comprises a first I/O node and is arranged to carry respective output signals, the first I/O node being coupled to the output of the combinatorial circuit;
 - the second selection of I/O nodes further comprises a second I/O node that is coupled to an I/O node from the first selection of I/O nodes in the test mode via a connection that bypasses the combinatorial circuit; and

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at least one of the second I/O node is coupled to the I/O node from the first selection of I/O nodes via a buffer circuit and the third I/O node is coupled to the further I/O node from the first selection of I/O nodes via an inverter.

4. (Previously presented) The electronic circuit as claimed in claim 1, further comprising a test control node, the electronic circuit being arranged to switch to the test mode responsive to the reception of a test control signal on the test control node.

5. (Previously presented) The electronic circuit as claimed in claim 1, further comprising a main unit being logically connected to the I/O nodes in a functional mode of the electronic circuit, the main unit being arranged to bring the electronic circuit into the test mode upon receipt of a test control signal in a form of a predefined bit pattern through at least a subset of the first selection of I/O nodes.

6. (Currently amended) An electronic circuit arrangement, comprising:

an electronic circuit as claimed in claim 4 or 5; and

a further electronic circuit ~~connected with the further electronic circuit,~~

wherein the further electronic circuit is arranged to provide the electronic circuit with the test control signal and to provide the first selection of I/O nodes with test patterns for testing the electronic circuit.

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7. (Previously presented) The electronic circuit arrangement as claimed in claim 6, wherein the further electronic circuit is arranged to receive test result data from the second selection of I/O nodes.

8. (Currently amended) A method for testing an electronic circuit, the electronic circuit comprising:

a plurality of input/output (I/O) nodes for connecting the electronic circuit to a further electronic circuit;

a test unit for testing the electronic circuit in a test mode of the electronic circuit, the test unit comprising a combinatorial circuit having a plurality of inputs and an output, the combinatorial circuit implementing an exclusive logic function;

the I/O nodes being logically connected to the test unit in the test mode, wherein:

a first selection of the I/O nodes is arranged to carry respective input signals and is connected to the plurality of inputs of the combinatorial circuit; and

a second selection of the I/O nodes comprises a first I/O node and is arranged to carry respective output signals, the first I/O node being coupled to the output of the combinatorial circuit;

the method comprising the acts of:

logically connecting the test unit to the electronic circuit;

putting test data to the electronic circuit by the further electronic circuit; and

receiving test result data through the first I/O node;

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receiving further test result data through a second I/O node from the second selection of I/O nodes, the second I/O node being coupled to an I/O node from the first selection of I/O nodes in the test mode via a connection that includes at least one of a buffer and an inverter, wherein the inverter facilitates a third I/O node being coupled to a further I/O node from the first selection of I/O nodes.